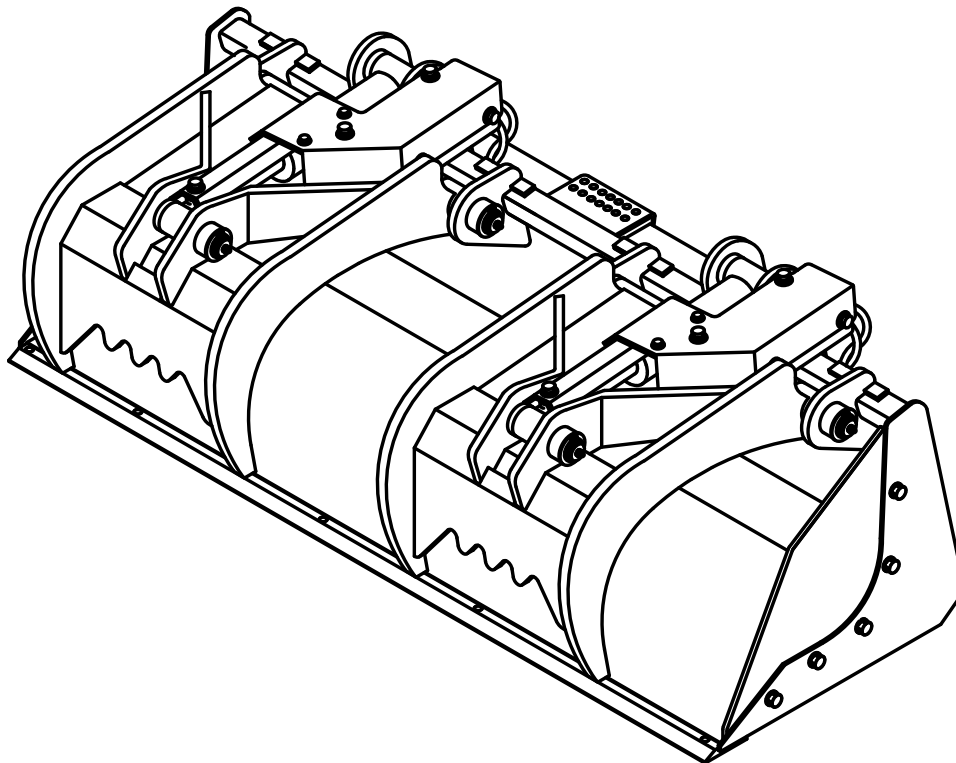




OPERATOR'S AND PARTS MANUAL

MODEL 120 & MODEL 130 SCRAP GRAPPLE BUCKET PATENTED



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: MR35624

Models covered:

LAF5073, LAF5078, LAF5082, LAF5087;
LAF5273, LAF5278, LAF5282, LAF5287;
LAF5283 and LAF5294

Rev. 4

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PREFACE

GENERAL COMMENTS

Congratulations on the purchase of your new FFC product! This product was carefully designed and manufactured to give you many years of dependable service. Only minor maintenance (such as cleaning and lubricating) is required to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and on any equipment on which the attachment is mounted.

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents.

WARNING! Never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual.



Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.

Unless noted otherwise, right and left sides are determined from the operator's control position when facing the attachment.

NOTE: The illustrations and data used in this manual were current (according to the information available to us) at the time of printing, however, we reserve the right to redesign and change the attachment as may be necessary without notification.

BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer to obtain further assistance. Keep this manual available for reference. Provide the manual to any new owners and/or operators.

SAFETY ALERT SYMBOL



This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working with you.

SERVICE

Use only manufacturer replacement parts. Substitute parts may not meet the required standards.

Record the model and serial number of your unit on the cover of this manual. The parts department needs this information to insure that you receive the correct parts.

SOUND AND VIBRATION

Sound pressure levels and vibration data for this attachment are influenced by many different parameters: some items are listed below (not inclusive):

- prime mover type, age, condition, with or without cab enclosure and configuration
- operator training, behavior, stress level
- job site organization, working material condition, environment

Based on the uncertainty of the prime mover, operator, and job site, it is not possible to get precise machine and operator sound pressure levels or vibration levels for this attachment.

NOTE: A list of all Paladin Patents can be found at <http://www.paladinbrands.com/patents.asp>.

SAFETY STATEMENTS



THIS SYMBOL BY ITSELF OR WITH A WARNING WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



DANGER

THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH WILL RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



WARNING

THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



CAUTION

THIS SIGNAL WORD IS USED WHERE MINOR INJURY COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

NOTICE

NOTICE INDICATES A PROPERTY DAMAGE MESSAGE.

GENERAL SAFETY PRECAUTIONS

WARNING! READ MANUAL PRIOR TO INSTALLATION



Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operators and maintenance personnel should read this manual, as well as all manuals related to this equipment and the prime mover thoroughly before beginning installation, operation, or maintenance. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVER'S MANUAL(S).**



READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws, and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing, or operating this equipment.



KNOW YOUR EQUIPMENT

Know your equipment's capabilities, dimensions and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to ensure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued, or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn and hard to read.

GENERAL SAFETY PRECAUTIONS

WARNING! PROTECT AGAINST FLYING DEBRIS



Always wear proper safety glasses, goggles or a face shield when driving pins in or out, or when any operation causes dust, flying debris, or any other hazardous material.

WARNING! LOWER OR SUPPORT RAISED EQUIPMENT



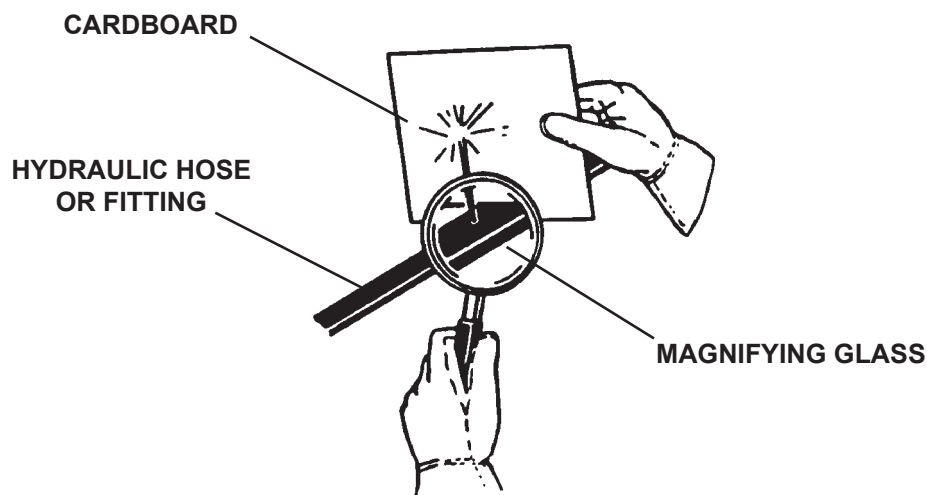
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground level or onto blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

WARNING! USE CARE WITH HYDRAULIC FLUID PRESSURE



Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible. Before connecting or disconnecting hydraulic hoses, read your prime movers operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

- Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.
- If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research immediately to determine proper treatment.
- Wear safety glasses, protective clothing, and use a sound piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS!** **SEE ILLUSTRATION.**



GENERAL SAFETY PRECAUTIONS

WARNING! DO NOT MODIFY MACHINE OR ATTACHMENTS



Modifications may weaken the integrity of the attachment and may impair the function, safety, life, and performance of the attachment. When making repairs, use only the manufacturer's genuine parts, following authorized instructions. Other parts may be substandard in fit and quality. Never modify any ROPS (Roll Over Protection Structure) or FOPS (Falling Object Protective Structure) equipment or device. Any modifications must be authorized in writing by the manufacturer.

WARNING! SAFELY MAINTAIN AND REPAIR EQUIPMENT



- Do not wear loose clothing, or any accessories that can catch in moving parts. If you have long hair, cover or secure it so that it does not become entangled in the equipment.
- Work on a level surface in a well-lit area.
- Use properly grounded electrical outlets and tools.
- Use the correct tool for the job at hand. Make sure they are in good condition for the task required.
- Wear the protective equipment specified by the tool manufacturer.

WARNING! SAFELY OPERATE EQUIPMENT



Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your machine's manual for these instructions.

- Keep all step plates, grab bars, pedals, and controls free of dirt, grease, debris, and oil.
- Never allow anyone to be around the equipment when it is operating.
- Do not allow riders on the attachment or the prime mover.
- Do not operate the equipment from anywhere other than the correct operators position.
- Never leave equipment unattended with the engine running or with this attachment in a raised position.
- Do not alter or remove any safety feature from the prime mover or this attachment.
- Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.

EQUIPMENT SAFETY PRECAUTIONS

WARNING! KNOW WHERE UTILITIES ARE



Observe overhead electrical and other utility lines. Be sure equipment will clear them. When digging, call your local utilities for location of buried utility lines, gas, water, and sewer, as well as any other hazard you may encounter.

WARNING! EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA DUST ALONG WITH OTHER HAZARDOUS DUSTS MAY CAUSE SERIOUS OR FATAL RESPIRATORY DISEASE.



It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause high levels of dust.

WARNING! REMOVE PAINT BEFORE WELDING OR HEATING



Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.

When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

WARNING! END OF LIFE DISPOSAL



At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all federal, state and local regulations for recycling and disposal of the fluid and components.



OPERATING THE ATTACHMENT

- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- When operating on slopes, drive up and down, not across. Avoid steep hillside operation, which could cause the prime mover to overturn.
- Reduce speed when driving over rough terrain, on a slope, or turning, to avoid overturning the vehicle.
- An operator must not use drugs or alcohol, which can change his or her alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advice on whether or not he or she can safely operate equipment.
- Never heap or load heavy material where the combined weight of the bucket and material could exceed the rated lifting capacity of the loader.
- Be sure the load does not stick out too far in front of the bucket. A light load sticking out too far can have the same tipping effect as a heavy load carried in close.

EQUIPMENT SAFETY PRECAUTIONS



OPERATING THE ATTACHMENT

- When using the grapple, lift the load slightly and make sure that the load is secure. If the load appears to be unstable, lower the load, open the grapple and reposition the load to attain full stability.
- Before exiting the prime mover, lower the attachment to the ground, turn off the primer mover's engine, remove the key and apply the brakes.



TRANSPORTING THE ATTACHMENT

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When transporting on a trailer: Secure attachment at recommended tie down locations using tie down accessories that are capable of maintaining attachment stability..
- When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs etc., to prevent accidents. Check local government regulations that may affect you.
- Do not drive close to ditches, excavations, etc., cave in could result.
- Do not smoke when refueling the prime mover. Allow room in the fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.



MAINTAINING THE ATTACHMENT

- Before performing maintenance, lower the attachment to the ground, apply the brakes, turn off the engine, and remove the key.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manual's before any repair is made. After completing maintenance or repair, check for correct functioning of the attachment. If not functioning properly, always tag "DO NOT OPERATE" until all problems are corrected.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from Paladin Light Construction.
- Never make hydraulic repairs while the system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.

DECALS

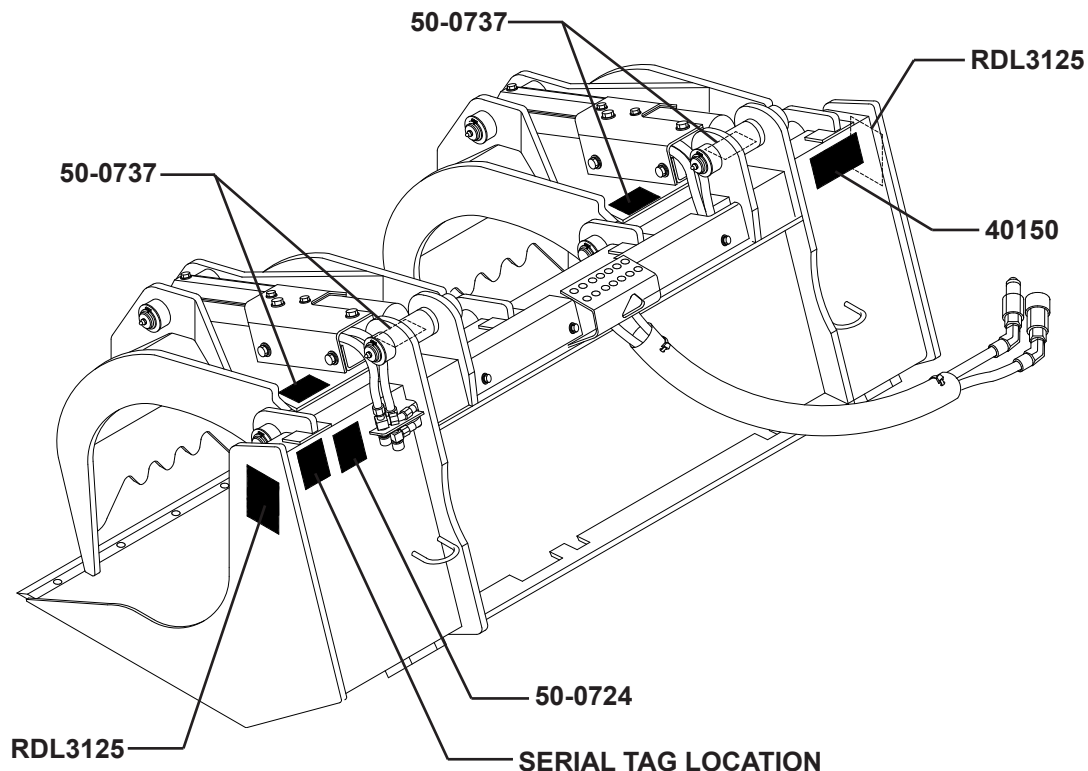
DECAL PLACEMENT

GENERAL INFORMATION

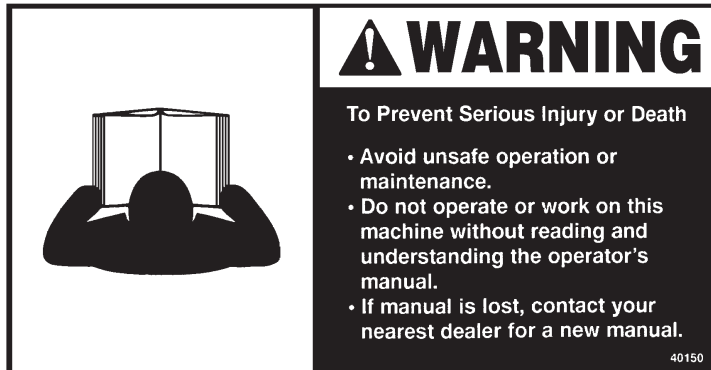
The following diagrams show the location of all the decals used on your attachment. The decals are identified by their part numbers, with the reductions of the actual decals shown on the following pages. Use this information to order replacements for lost or damaged decals. Be sure you understand all decals before operating the attachment. They contain information you need to know for attachment safety. (See decal explanations.)

IMPORTANT: Keep all safety decals clean and legible. Replace all missing, or damaged safety decals. When replacing parts with safety decals attached, the safety decals must also be replaced.

REPLACING SAFETY DECALS: Clean the area of application with a nonflammable solvent, then wash the same area with soap and water. Allow the surface to dry. Remove the backing from the safety decal, exposing the adhesive surface. Apply the safety decal to the position shown in the diagram, and smooth out any bubbles.



DECALS



PART #40150
WARNING! READ OPERATOR'S MANUAL



PART #50-0724
WARNING! HIGH PRESSURE FLUID



PART #50-0737
WARNING! PINCH POINT HAZARD



PART #RDL3125
WARNING! CRUSH HAZARD



INSTALLATION AND OPERATION

WARNING! Improper attachment of the Grapple Bucket could result in injury or death.



Do not operate this product until you have positive indication that the attachment is securely mounted.

GENERAL INFORMATION

The FFC grapple buckets were designed to be used on various prime movers with various different horsepower, operating capacities and lifting capacities. Before installing the attachment you have received onto your prime mover, verify that your attachment is compatible with your prime mover. Check to be certain each unit is within the limitations of the other. Operating the attachment on a prime mover that exceeds any of the recommended specifications will cause damage to the attachment and void all warranties.

Due to the different prime movers that these attachments can be mounted on, the hydraulic power and return hoses and couplers vary according to the prime mover.

HOSE REQUIREMENTS

Power and Return hoses and couplers are included for skid steer applications only. All other power and return hoses and couplers must be purchased from your dealer for installation of the attachment onto your prime mover. The hoses must be long enough to accommodate for complete roll out of the attachment, must have a minimum rated working pressure of 4000 PSI and a minimum of .25" in diameter.

INSTALLATION

Install the attachment by following your power units operator's manual for installing an attachment.

WARNING! To avoid serious personal injury, make sure the attachment is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the prime mover.



Install the power and return hoses (purchased from your dealer) to the fittings on the grapple followed by the couplers. Connect the hydraulic quick couplers to the auxiliary hydraulics and route the hoses in such a fashion as to prevent chafing or pinching, and secure in place wherever necessary.

Start engine and slowly cycle the cylinder(s) several times to purge system of air. Check for proper hydraulic connection, hose routing and hose length.

NOTE: Power and return hoses must be long enough to accommodate complete rollout of the bucket.

Check the assembly for proper assembly, installation and hydraulic leaks.

INSTALLATION AND OPERATION

DETACHING

On firm level ground, close the grapple and lower the loader arms until the attachment is on the ground.

Turn off the engine. Move control levers back and forth to relieve pressure in the line. Disconnect couplers.

NOTE: Connect couplers together or install caps to prevent contaminants from entering the hydraulic system. Store unit with the hoses secured off the ground to help prevent damage.

Follow your prime mover's operator's manual for detaching (removing) an attachment.

NOTE: Frequent lubrication of grease fittings at the cylinder pivot pins and on each of the grapple pins with a multi-purpose grease will greatly increase life of the product.

OPERATION

INTENDED USE: All Grapples were all designed to pick up bulky, unusually shaped or long materials that would not stay in an ordinary bucket. Using the grapple attachment in any other way is considered contrary to its intended use.

1. Approach the load in such a fashion that the weight will be centered on the floor of the bucket or in the grapples.

NOTE: When operating the buckets, the heaviest side should be towards the back of the bucket and not near the bucket edge. Verify that the bucket is completely under the load and the bucket floor is level.

2. Close the grapples to their fullest extent possible and lift the attachment slightly to be certain that the load is secure.

NOTE: If the load appears to be unstable, lower the bucket to the ground, open the grapples and reposition the load to attain full stability. Repeat until full stability is achieved.

NOTICE: *When using the grapples as a rake to drag material into position for pick-up, THE GRAPPLES MUST BE COMPLETELY OPEN. Applying a raking-type force to partially open grapples will greatly magnify the fluid pressure in the hydraulic hoses, fittings and cylinder(s) which may cause component failure.*

WARNING! Avoid serious injury. THE GRAPPLES MOVE QUICKLY! Do not allow anyone between the grapple and the bucket.



Do not lift any load that is taller than the height of the fully opened grapple.

Do not roll back this product so that the load falls off toward or on the operator.

INSTALLATION AND OPERATION

STORAGE

- Clean the unit thoroughly, removing all mud, dirt, and grease.
- Inspect for visible signs of wear, breakage, or damage. Order any parts required and make the necessary repairs to avoid delays upon removal from storage.
- Tighten loose nuts, capscrews and hydraulic connections.
- Coat exposed portions of the cylinder rods with grease.
- Lubricate grease fittings.
- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage.
- Replace decals that are damaged or in unreadable condition.
- Store unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

Additional Precautions for Long Term Storage:

- Touch up all unpainted surfaces with paint to prevent rust.

REMOVAL FROM STORAGE

- Remove cover.
- Wash unit and replace any damaged and/or missing parts.
- Lubricate grease fittings.
- Check hydraulic hoses for damage and replace as necessary.

LIFT POINTS

Lifting points are identified by lifting decals where required. Lifting at other points is unsafe and can damage attachment. Do not attach lifting accessories around cylinders or in any way that may damage hoses or hydraulic components.

**LIFT POINTS VARY PER MODEL. WHEN LIFTING
DECALS ARE NOT PRESENT, VERIFY THAT LIFTING
ACCESSORIES ARE SECURELY ATTACHED AND
UNIT IS STABLE BEFORE LIFTING.**

- Attach lifting accessories to unit at recommended lifting points.
- Bring lifting accessories together to a central lifting point.
- Lift gradually, maintaining the equilibrium of the unit.
-

WARNING! Use lifting accessories (chains, slings, ropes, shackles and etc.) that are capable of supporting the size and weight of your attachment. Secure all lifting accessories in such a way to prevent unintended disengagement. Failure to do so could result in the attachment falling and causing serious personal injury or death.




INSTALLATION AND OPERATION

TIE DOWN POINTS

Tie down points are identified by tie down decals where required. Securing to trailer at other points is unsafe and can damage attachment. Do not attach tie down accessories around cylinders or in any way that may damage hoses or hydraulic components. See Diagram

TIE DOWN POINTS VARY PER MODEL. WHEN TIE DOWN DECALS ARE NOT PRESENT, VERIFY THAT TIE DOWN ACCESSORIES ARE SECURELY ATTACHED AND UNIT IS STABLE BEFORE TRANSPORTING.

- Attach tie down accessories to unit as recommended.
- Check unit stability before transporting.

WARNING!  **Verify that all tie down accessories (chains, slings, ropes, shackles and etc.) are capable of maintaining attachment stability during transporting and are attached in such a way to prevent unintended disengagement or shifting of the unit. Failure to do so could result in serious personal injury or death.**

TRANSPORTING

Follow all local government regulations that may apply along with recommended tie down points and any equipment safety precautions at the front of this handbook when transporting your attachment.

MAINTENANCE AND SERVICE

MAINTENANCE SCHEDULE

Procedure	Daily	Every 40 Hours
Check all bolts and nuts for tightness	✓	
Replace any missing bolts or nuts with approved replacement parts	✓	
Check hydraulic system for hydraulic oil leaks. see procedure below.	✓	
Visually inspect the machine for worn parts or cracked welds, and repair as necessary.	✓	
Lubricate all grease fittings		✓

Oil Cleanliness Requirements

IMPORTANT - All hydraulic fluid shall be filtered before use in any FFC product to obtain the ISO cleanliness standard of 20/18/15. Unless explicitly specified otherwise.

Fittings/Hoses Inspection Guidelines

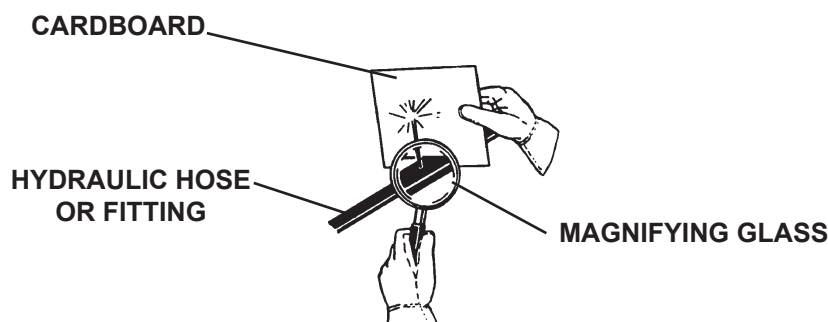
Stop the prime mover engine and release hydraulic pressure before servicing or adjusting hydraulic system.

WARNING! Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.



Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.

If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.



IMPORTANT: When replacing parts, use only factory approved replacement parts. Manufacturer will not claim responsibility for use of unapproved parts or accessories, and/or other damages as a result of their use.

MAINTENANCE AND SERVICE

CYLINDER SEAL REPLACEMENT

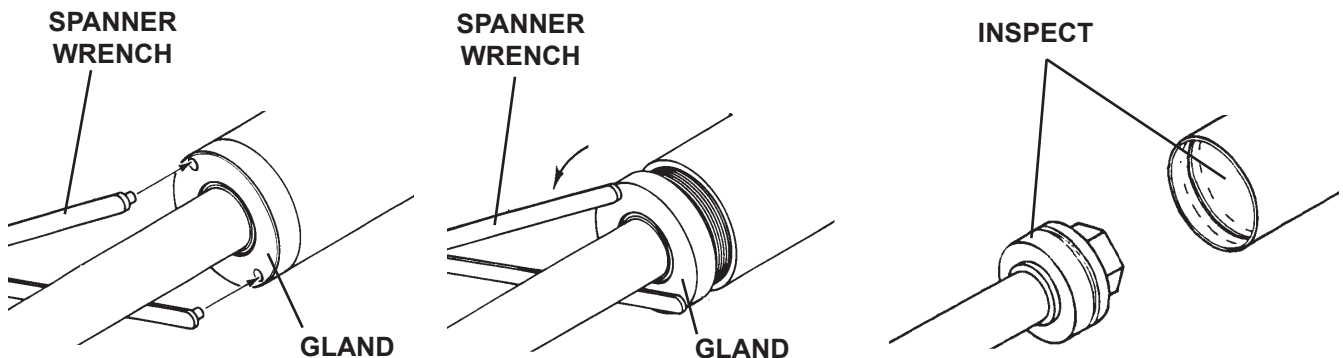
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic cylinders. Always protect the active part of the cylinder rod (the chrome section). Nicks or scratches on the surface of the rod could result in cylinder failure. Clean all parts thoroughly with a cleaning solvent before reassembly.

DISASSEMBLY PROCEDURE

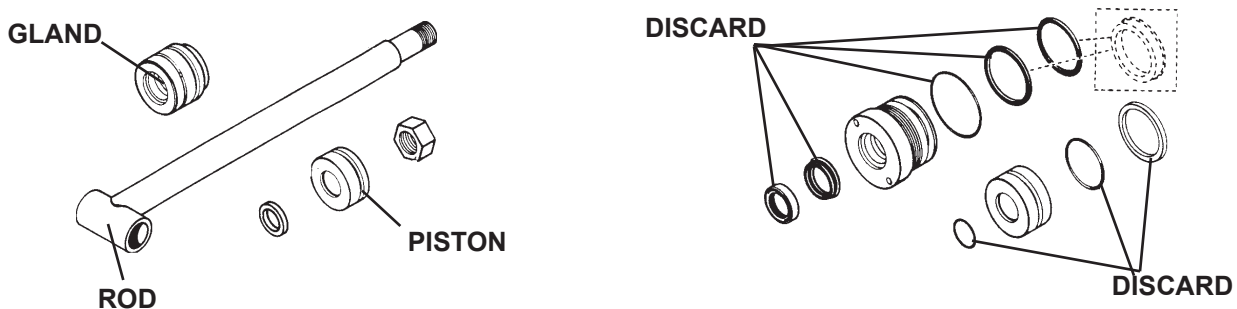
IMPORTANT: Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

THREADED TYPE GLAND

1. Rotate the gland with a spanner wrench counterclockwise until the gland is free of the cylinder tube.
2. Pull the cylinder rod from the cylinder tube and inspect the piston and the bore of the cylinder tube for deep scratches or galling. If damaged, the piston AND the cylinder tube must be replaced.



3. Remove the hex nut, piston, flat washer or spacer tube (if so equipped), and gland from the cylinder rod. If the cylinder rod is rusty, scratched, or bent, it must be replaced.
4. Remove and discard all the old seals.



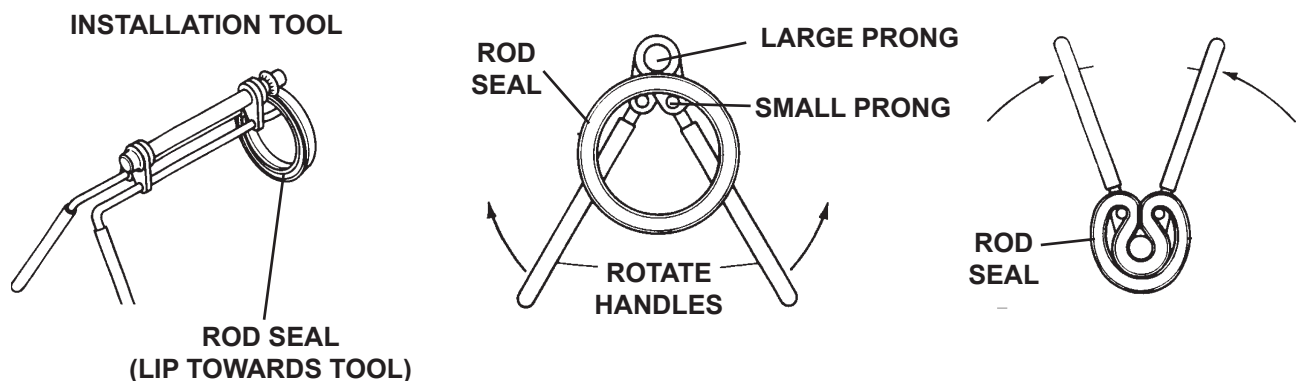
MAINTENANCE AND SERVICE

ASSEMBLY PROCEDURE

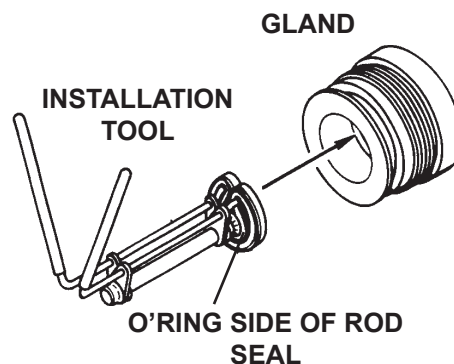
IMPORTANT: Replace all seals even if they do not appear to be damaged. Failure to replace all seals may result in premature cylinder failure. **NOTE:** Seal kits will service most cylinders of similar bore size and rod diameter.

1. Install the cylinder rod seal in the gland first. Be careful not to damage the seal in the process, as it is somewhat difficult to install.

NOTE: A special installation tool (Part #65349) is available to help with installing the seal. Simply fit the end of the tool over the seal so that the large prong of the tool is on the outside of the seal, and the two smaller prongs on the inside. The lip of the seal should be facing towards the tool. Rotate the handles on the tool around to wrap the seal around the end of the tool.

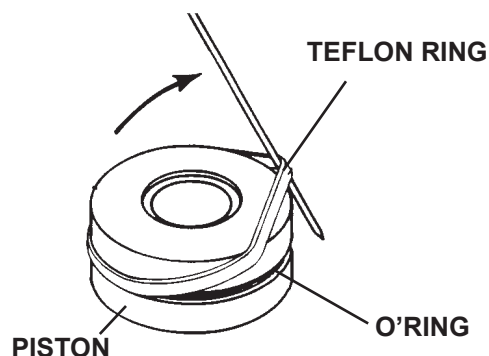


Now insert the seal into the gland from the inner end. Position the seal in its groove, and release and remove the tool. Press the seal into its seat the rest of the way by hand.



2. Install the new piston ring, rod wiper, O-rings and backup washers, if applicable, on the piston.

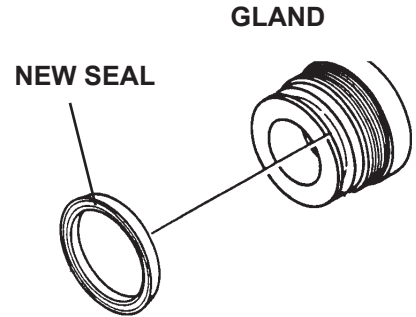
Be careful not to damage the seals. Caution must be used when installing the piston ring. The ring must be stretched carefully over the piston with a smooth, round, pointed tool.



MAINTENANCE AND SERVICE

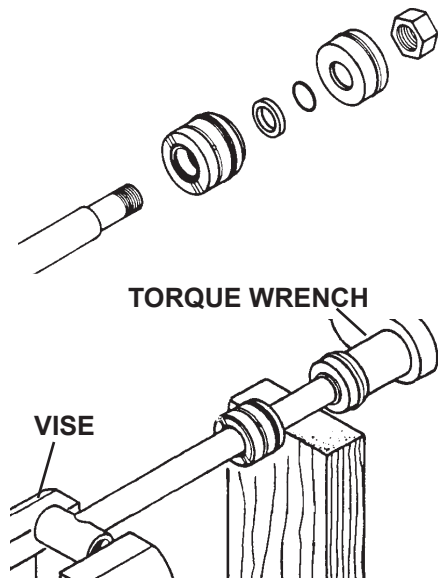
- After installing the rod seal inside the gland, as shown in step #1, install the external seal.

NOTE: Threaded glands may have been equipped with a separate O-ring and backup washer system or a polypak (all in one) type seal. Current seal kits contain a polypak (all in one) type seal to replace the discarded seal types on ALL THREADED GLANDS.



- Slide the gland onto the cylinder rod, being careful not to damage the rod wiper. Then install the spacer, or flat washer (if so equipped), small o-ring, piston, and hex nut onto the end of the cylinder rod.
- Secure the cylinder rod (mounting end) in a vise with a support at its center. Torque the nut to the amount shown for the thread diameter of the cylinder rod (see chart).

Thread Diameter	POUNDS - FEET	NEWTON-METERS
7/8"	150-200	203.4-271.2
*1"	230-325	311.8-440.6
1-1/8"	350-480	474.5-650.8
1-1/4"	490-670	664.4-908.4
1-3/8"	670-900	908.4-1 220.2
* 1" Thread Diameter WITH 1-1/4" Rod Diameter		
Min. 230 ft. lbs. (311.8 N·m) Max. 250 ft. lbs. (339.0 N·m)		



IMPORTANT: Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

- Apply a lubricant (such as Lubriplate #105) to the piston and teflon ring. Insert the cylinder rod assembly into the cylinder tube.

IMPORTANT: Ensure that the piston ring fits squarely into the cylinder tube and piston groove, otherwise the ring may be damaged and a leak will occur.

- Use a spanner wrench to rotate the gland clockwise into the cylinder. Continue to rotate the gland with the spanner wrench until it is tight.

WARNING! Cylinders serviced in the field are to be tested for leakage prior to the attachment being placed in work. Failure to test rebuilt cylinders could result in damage to the cylinder and/or the attachment, cause severe personal injury or even death.



SPECIFICATIONS

IMPORTANT Exceeding any of the maximum recommended prime mover specifications **CAN** result in damage to this product and **WILL** void all FFC warranties.

DESCRIPTION	SPECIFICATIONS	
SCRAP GRAPPLE BUCKETS	MODEL 120	MODEL 130
Weight of Prime Mover without Grapple Bucket	11,000 lbs. maximum	32,000 lbs. maximum
Lift Capacity of Prime Mover's Loader	7,500 lbs. maximum	10,000 lbs. maximum
Operating Capacity of Prime Mover's Loader	3,750 lbs. maximum	5,000 lbs. maximum
Hydraulic Pressure Output	4,000 psi maximum	
Rear Ballast	As required to maintain full prime mover stability. (Note the shipping weight of your model, then see the operator's manual(s) for your prime mover and loader for ballasting needs.)	

ATTACHMENT SPECIFICATIONS

Model Number	Overall Width	Overall Height w/ Closed Grapples	Overall Depth w/ Univ Mounts	Weight
STANDARD DUTY CONSTRUCTION				
LAF5073	74"	28.69"	41.25"	1246#
LAF5078	79"	28.69"	41.25"	1281#
LAF5082	83"	28.69"	41.25"	1309#
LAF5087	88"	28.69"	41.25"	1344#
HEAVY DUTY CONSTRUCTION				
LAF5273	74"	28.69"	41.25"	1279#
LAF5278	79"	28.69"	41.25"	1314#
LAF5282	83"	28.69"	41.25"	1342#
LAF5287	88"	28.69"	41.25"	1377#
EXTRA HEAVY DUTY CONSTRUCTION				
LAF5283	83"	31.75"	38.88"	1465#
LAF5294	94"	31-.75"	38.88"	1545#
All replacement hydraulic hoses and fittings must have a minimum rated working pressure of 4,000 psi.				

BOLT TORQUE

BOLT TORQUE SPECIFICATIONS

GENERAL TORQUE SPECIFICATION TABLES


Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

SAE BOLT TORQUE SPECIFICATIONS




NOTE: The following torque values are for use with extreme pressure lubricants, plating or hard washer applications. Increase torque 15% when using hardware that is unplated and either dry or lubricated with engine oil.

Bolt Size		SAE GRADE 5 TORQUE				SAE GRADE 8 TORQUE				Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary
		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		
Inches	Millimeters	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	
1/4	6.35	8	9	11	12	10	13	14	18	
5/16	7.94	14	19	19	23	20	25	27	34	
3/8	9.53	30	36	41	49	38	46	52	62	
7/16	11.11	46	54	62	73	60	71	81	96	
1/2	12.70	68	82	92	111	94	112	127	152	
9/16	14.29	94	112	127	152	136	163	184	221	
5/8	15.88	128	153	174	207	187	224	254	304	
3/4	19.05	230	275	312	373	323	395	438	536	
7/8	22.23	340	408	461	553	510	612	691	830	
1	25.40	493	592	668	803	765	918	1037	1245	
1-1/8	25.58	680	748	922	1014	1088	1224	1475	1660	
1-1/4	31.75	952	1054	1291	1429	1547	1700	2097	2305	
1-3/8	34.93	1241	1428	1683	1936	2023	2312	2743	3135	
1-1/2	38.10	1649	1870	2236	2535	2686	3026	3642	4103	




GRADE 2



GRADE 5






GRADE 8



METRIC BOLT TORQUE SPECIFICATIONS

NOTE: The following torque values are for use with metric hardware that is unplated and either dry or lubricated with engine oil. Reduce torque 15% when using hardware that has extreme pressure lubricants, plating or hard washer applications.

Bolt head identification marks as per grade.		
		

Size of Bolt	Grade No.	Pitch (mm)	Pounds Feet	Newton-Meters	Pitch (mm)	Pounds Feet	Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
M10	5.6	1.5	20-25	27.1-33.9	1.25	20-29	27.1-39.3
	8.8		34-40	46.1-54.2		35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
M12	5.6	1.75	28-34	37.9-46.1	1.25	31-41	42-55.6
	8.8		51-59	69.1-79.9		56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
M14	5.6	2.0	49-56	66.4-75.9	1.5	52-64	70.5-86.7
	8.8		81-93	109.8-126		90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
M16	5.6	2.0	67-77	90.8-104.3	1.5	69-83	93.5-112.5
	8.8		116-130	157.2-176.2		120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
M18	5.6	2.0	88-100	119.2-136	1.5	100-117	136-158.5
	8.8		150-168	203.3-227.6		177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
M20	5.6	2.5	108-130	146.3-176.2	1.5	132-150	178.9-203.3
	8.8		186-205	252-277.8		206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6

Limited Warranty

Except for the Excluded Products as described below, all new products are warranted to be free from defects in material and/or workmanship during the Warranty Period, in accordance with and subject to the terms and conditions of this Limited Warranty.

1. Excluded Products. The following products are excluded from this Limited Warranty:

(a) Any cable, part that engages with the ground (i.e. sprockets), digging chain, bearing, teeth, tamping and/or demolition head, blade cutting edge, pilot bit, auger teeth and broom brush that either constitutes or is part of a product.

(b) Any product, merchandise or component that, in the opinion of Paladin Light Construction¹, has been (i) misused; (ii) modified in any unauthorized manner; (iii) altered; (iv) damaged; (v) involved in an accident; or (vi) repaired using parts not obtained through Paladin Light Construction.

2. Warranty Period. The Limited Warranty is provided only to those defects that occur during the Warranty Period, which is the period that begins on the first to occur of: (i) the date of initial purchase by an end-user, (ii) the date the product is first leased or rented, or (iii) the date that is six (6) months after the date of shipment by Paladin Light Construction as evidenced by the invoiced shipment date (the "Commencement Date") and ends on the date that is twelve (12) months after the Commencement Date.

3. Terms and Conditions of Limited Warranty. The following terms and conditions apply to the Limited Warranty hereby provided:

(a) Option to Repair or Replace. Paladin Light Construction shall have the option to repair or replace the product.

(b) Timely Repair and Notice. In order to obtain the Limited Warranty, (i) the product must be repaired within thirty (30) days from the date of failure, and (ii) a claim under the warranty must be submitted to Paladin Light Construction in writing within thirty (30) days from the date of repair.

(c) Return of Defective Part or Product. If requested by Paladin Light Construction, the alleged defective part or product shall be shipped to Paladin Light Construction at its manufacturing facility or other location specified by Paladin Light Construction, with freight PRE-PAID by the claimant, to allow Paladin Light Construction to inspect the part or product.

Claims that fail to comply with any of the above terms and conditions shall be denied.

LIMITATIONS AND EXCLUSIONS.

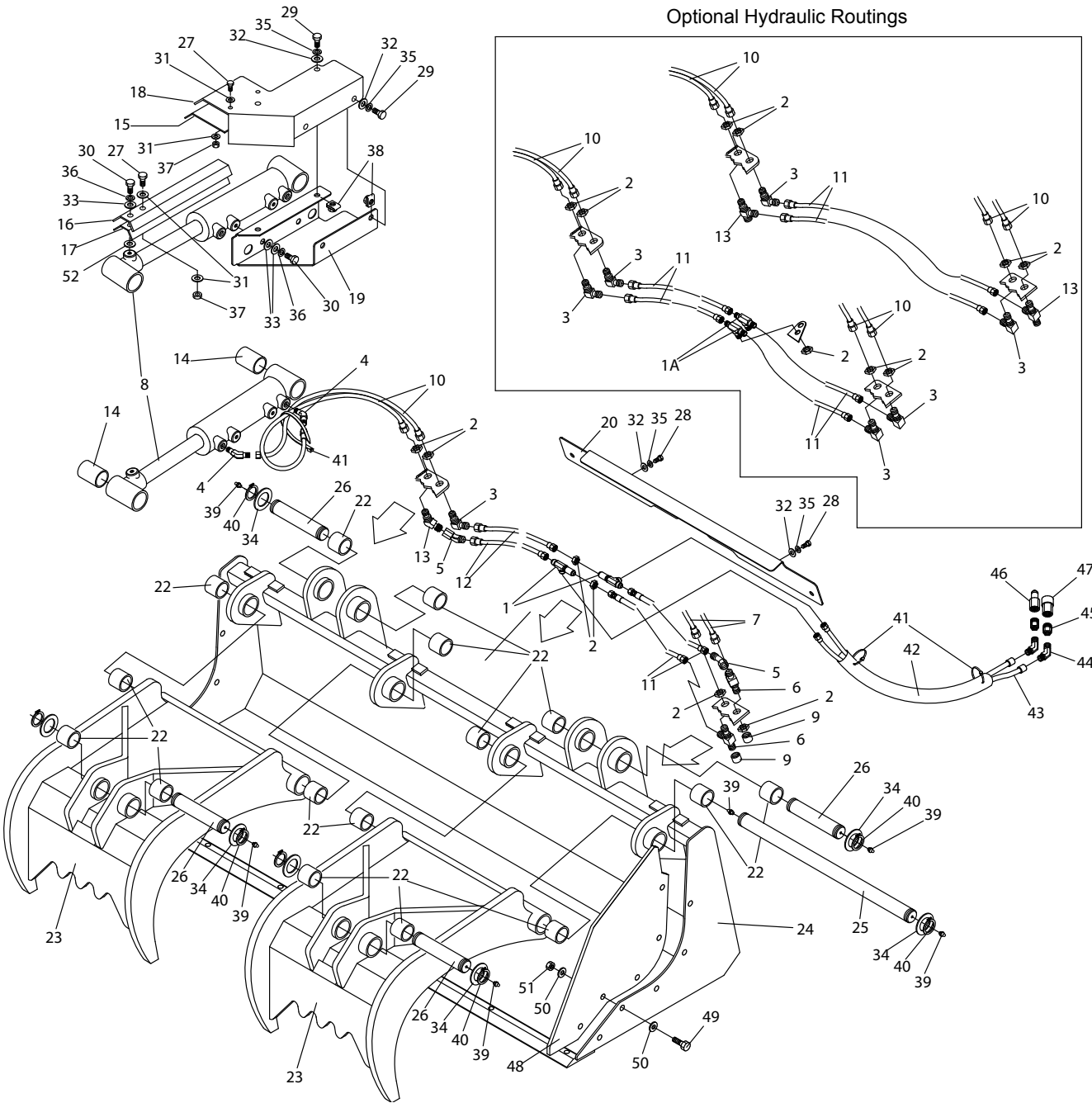
THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY BASED ON A COURSE OF DEALING OR USAGE OF TRADE.

IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES.

IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR ANY LOSS OR CLAIM IN AN AMOUNT IN EXCESS OF THE PURCHASE PRICE, OR, AT THE OPTION OF PALADIN LIGHT CONSTRUCTION, THE REPAIR OR REPLACEMENT, OF THE PARTICULAR PRODUCT ON WHICH ANY CLAIM OF LOSS OR DAMAGE IS BASED. THIS LIMITATION OF LIABILITY APPLIES IRRESPECTIVE OF WHETHER THE CLAIM IS BASED ON BREACH OF CONTRACT, BREACH OF WARRANTY, NEGLIGENCE OR OTHER CAUSE AND WHETHER THE ALLEGED DEFECT IS DISCOVERABLE OR LATENT.

¹Attachment Technologies Inc., a subsidiary of Paladin Brands Holding, Inc. (PBHI) is referred to herein as Paladin Light Construction.

MODEL 120 (STANDARD FEATURED) SCRAP GRAPPLE BUCKET **CONSTRUCTION GRADE**



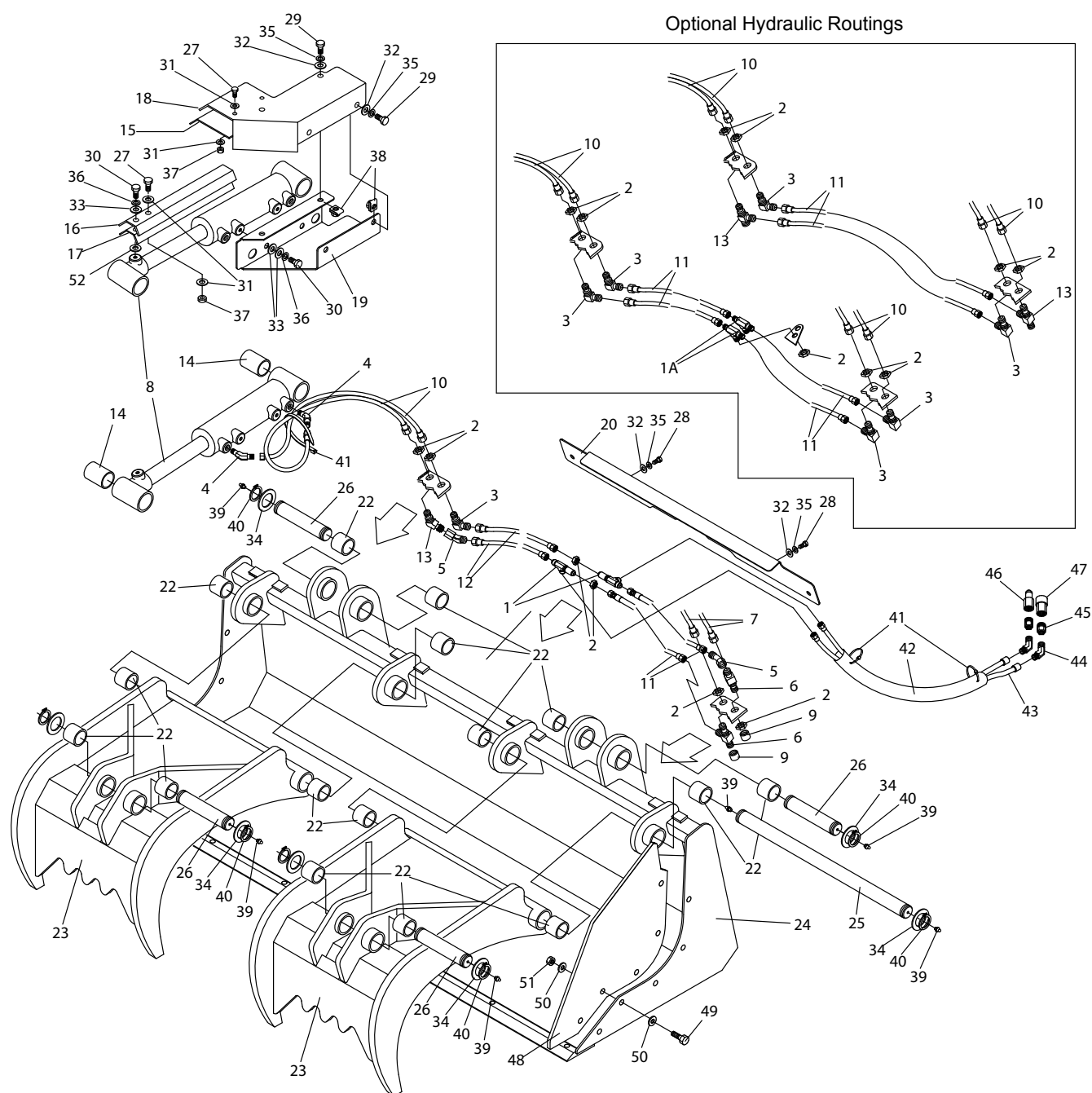
MODEL 120 (STANDARD FEATURED) SCRAP GRAPPLE BUCKET CONSTRUCTION GRADE

ITEM	QTY	LAF5073 73"	LAF5078 78"	LAF5082 82"	LAF5087 87"	DESCRIPTION
*1	2				30379	Run Tee-BH 6MJ-6MJ-6MJ
*1A	2				3498	Branch Tee-BH 6MJ-6MJ-6MJ
2	6				3217	Jam Nut-BH, 6JIC
3	1				3282	90° Elbow-BH, 6MJ-6MJ
4	4				30313	45° Elbow 6MBo-6MJ
5	2				3469	45° Elbow 6MJ-6FJX
6	2				30379	Run Tee-BH 6MJ-6MJ-6MJ
7	2				38195	Hose .25" x 19", 6FJ-6FJ
8	2				LAF4773	Cylinder Assembly
9	2				3285	Cap 6FJ
10	2				38195	Hose .25" x 19", 6FJ-6FJ
11	2				37282	Hose .25" x 24", 6FJ-6FJ
12	2				37014	Hose .25" x 13", 6FJ-6FJ
13	1				30417	45° Elbow-BH 6MJ-6MJ
20	1				13-50012	Hose Guard (varies by model)
22	16				LAF9602	Spring Bushing 1.75" x 1.50" x 2.00"
23	2				LAF9603	Grapple
24	1	LAF9604	LAF9562	LAF9589	LAF9561	Bucket
25	2				LAF9384	Grapple Pivot Pin
26	4				LAF9385	Cylinder Pin
28	4				1043	.38" UNC X 1.00" Hex Capscrew
32	4				1514	.38" Flat Washer
34	12				68057	Machinery Bushing 1.50" x 2.25"
35	4				1503	.38" Lock Washer
39	8				6616	Grease Fitting
40	12				1684	Snap Ring 1.50"
41	4				7104	Cable Ties
*42	1				34089	Hose Sock
*43	2				LAF4343	Hose .38" X 78" 6FJ-8MBo
*44	2				30442	90° Elbow 8FBo-8MBo (Not required for all models)
*45	2				30377	Straight Adapter 8FBo-12MBo (Not required for all models)
*46	1				22519	Male Coupler
*47	1				22518	Female Coupler

NOTE: All parts are the same as LAF5087 except for those parts numbered under other sizes.

*ITEM may vary per Prime Mover -- Contact FFC for correct item.

MODEL 120 (STANDARD FEATURED) SCRAP GRAPPLE BUCKET CONSTRUCTION GRADE - OPTIONAL KITS



MODEL 120 (STANDARD FEATURED) SCRAP GRAPPLE BUCKET

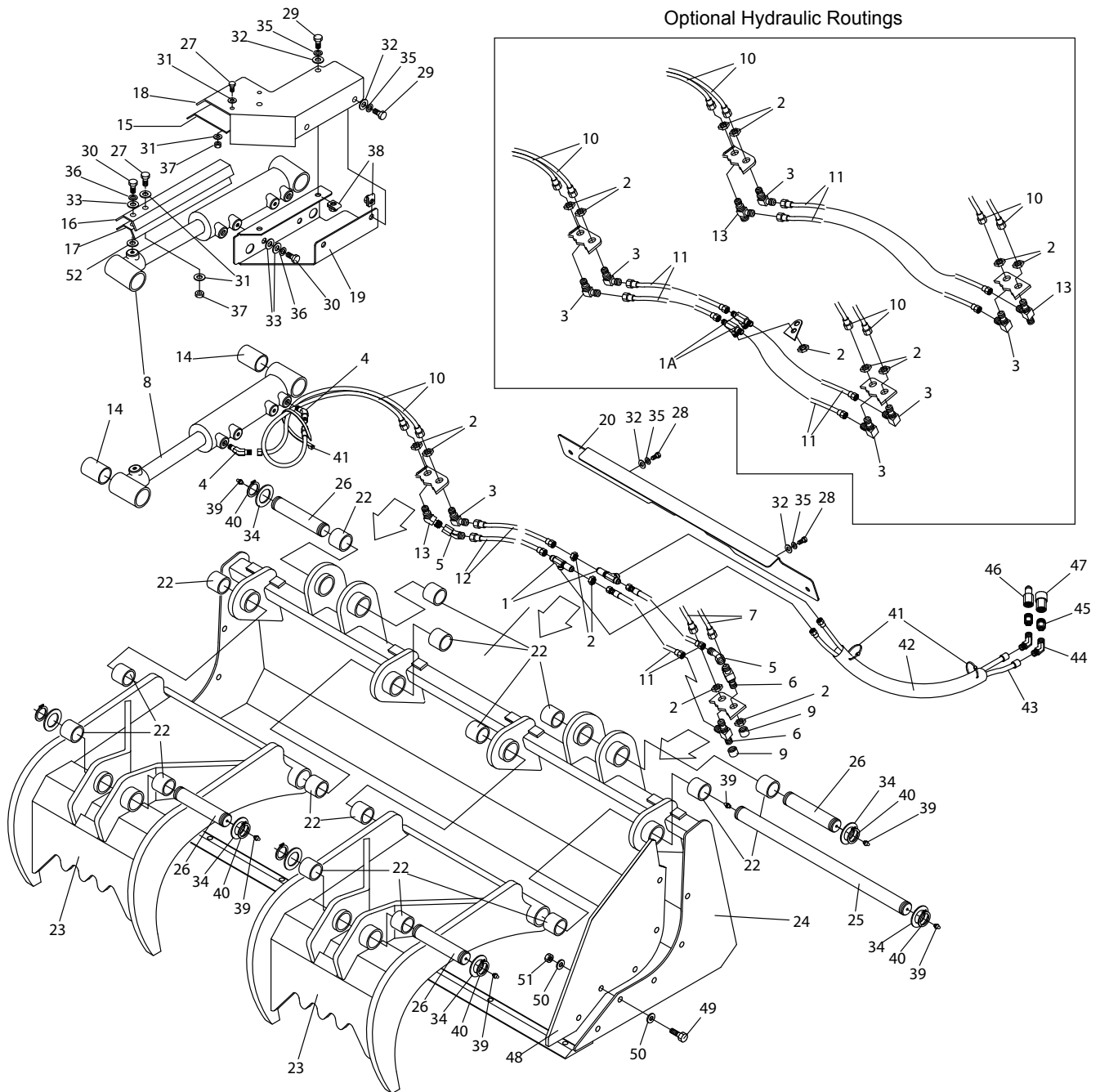
CONSTRUCTION GRADE - OPTIONAL KITS

ITEM	QTY	LAF5073 73"	LAF5078 78"	LAF5082 82"	LAF5087 87"	DESCRIPTION
					LAF5004	OPTIONAL 120 GRAPPLE HOSE/ CYLINDER GUARD KIT
15	2				LAF9571	Cylinder Cover Top Liner
16	2				LAF9572	Cylinder Guard
17	2				LAF9573	Cylinder Guard Liner
18	2				LAF9592	Cylinder Guard Top (varies by model)
19	2				LAF9593	Cylinder Guard Bottom (varies by model)
27	6				1002	.25" UNC X .75" Hex Capscrew
29	8				1044	.38" UNC X 1.25" Hex Capscrew
30	6				1088	.50" UNC X 1.00" Hex Capscrew
31	12				1512	.25" Flat Washer
32	8				1514	.38" Flat Washer
33	10				1516	.50" Flat Washer
35	8				1503	.38" Lock Washer
36	6				1505	.50" Lock Washer
37	6				1629	.25" UNC Nylock Nut
38	8				RHW7210	.38" UNC U-Style Clip Nut

					LAF5250	OPTIONAL END PLATE EXTENSION KIT
48	2				LAF9556	Endplate Extension Plate
49	8				1091	.50" UNC X 1.75" Hex Capscrew
50	16				1516	.50" Flat Washer
51	8				1841	.50" UNC Deformed Lock Nut

NOTE: All parts are the same as LAF5087 except for those parts numbered under other sizes.

MODEL 120 (FULL FEATURED) SCRAP GRAPPLE BUCKET HEAVY DUTY CONSTRUCTION GRADE



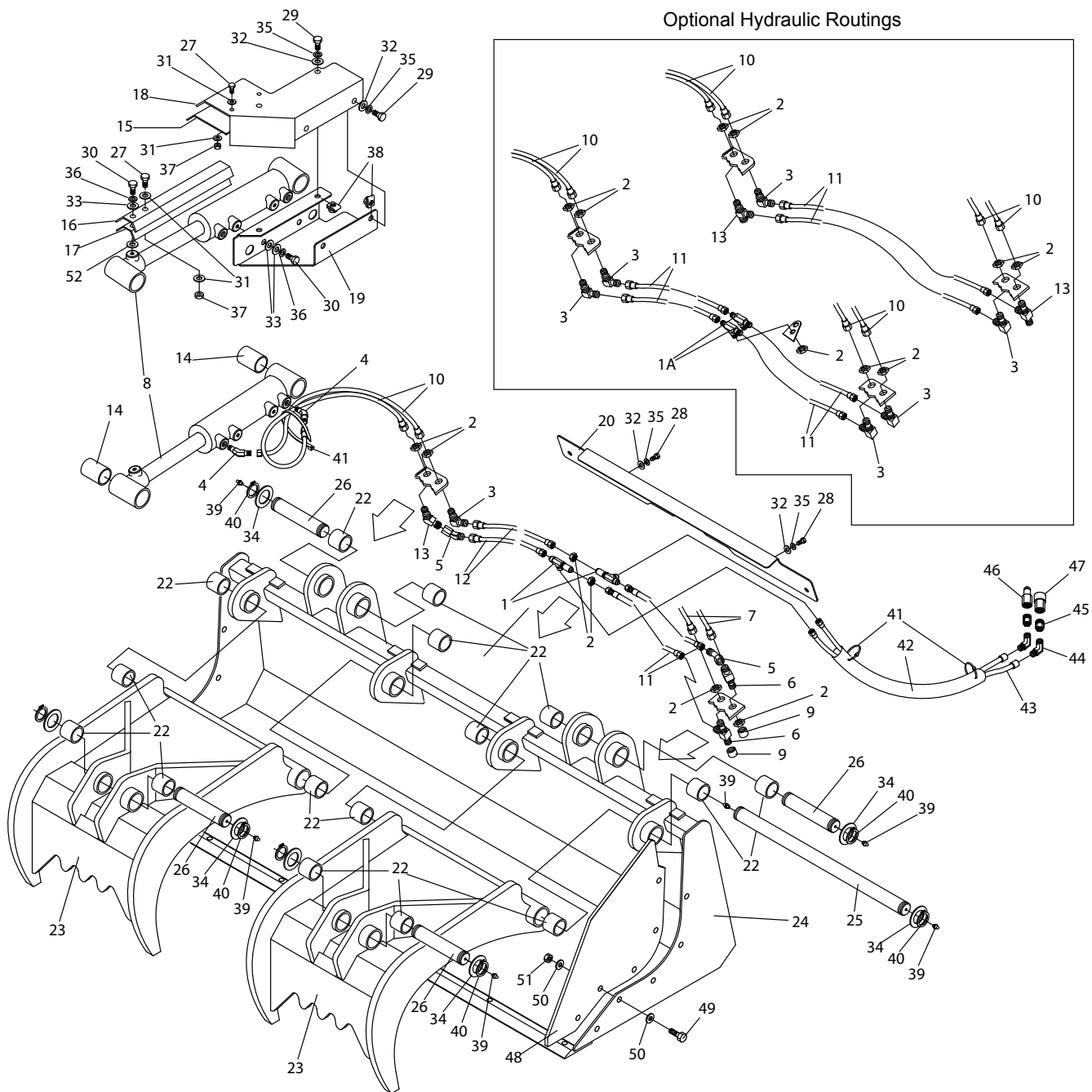
MODEL 120 (FULL FEATURED) SCRAP GRAPPLE BUCKET HEAVY DUTY CONSTRUCTION GRADE

ITEM	QTY	LAF5273 73"	LAF5278 78"	LAF5282 82"	LAF5287 87"	DESCRIPTION
*1	2				30379	Run Tee-BH 6MJ-6MJ-6MJ
*1A	2				3498	Branch Tee-BH 6MJ-6MJ-6MJ
2	6				3217	Jam Nut-BH, 6JIC
3	1				3282	90° Elbow-BH, 6MJ-6MJ
4	4				30313	45° Elbow 6MBo-6MJ
5	2				3469	45° Elbow 6MJ-6FJX
6	2				30379	Run Tee-BH 6MJ-6MJ-6MJ
7	2				38195	Hose .25" x 19", 6FJ-6FJ
8	2				LAF4773	Cylinder Assembly
9	2				3285	Cap 6FJ
10	2				38195	Hose .25" x 19", 6FJ-6FJ
11	2				37282	Hose .25" x 24", 6FJ-6FJ
12	2				37014	Hose .25" x 13", 6FJ-6FJ
13	1				30417	45° Elbow-BH 6MJ-6MJ
14	4				LAF9559	Spring Bushing 1.75" x 1.50" x 3"
15	2				LAF9571	Cylinder Cover Top Liner
16	2				LAF9572	Cylinder Guard
17	2				LAF9573	Cylinder Guard Liner
18	2				LAF9592	Cylinder Guard Top (varies by model)
19	2				LAF9593	Cylinder Guard Bottom (varies by model)
20	1				13-50012	Hose Guard (varies by model)
22	16				LAF9602	Spring Bushing 1.75" x 1.50" x 2.00"
23	2				LAF9603	Grapple
24	1	LAF9604	LAF9562	LAF9589	LAF9561	Bucket
25	2				LAF9606	Grapple Pivot Pin
26	4				LAF9607	Cylinder Pin
27	6				1002	.25" UNC X .75" Hex Capscrew
28	4				1043	.38" UNC X 1.00" Hex Capscrew
29	8				1044	.38" UNC X 1.25" Hex Capscrew
30	6				1088	.50" UNC X 1.00" Hex Capscrew
31	12				1512	.25" Flat Washer
32	12				1514	.38" Flat Washer
33	10				1516	.50" Flat Washer
34	12				68057	Machinery Bushing 1.50" x 2.25"

NOTE: All parts are the same as LAF5287 except for those parts numbered under other sizes.

*ITEM may vary per Prime Mover -- Contact FFC for correct item.

MODEL 120 (FULL FEATURED) SCRAP GRAPPLE BUCKET HEAVY DUTY CONSTRUCTION GRADE



MODEL 120 (FULL FEATURED) SCRAP GRAPPLE BUCKET

HEAVY DUTY CONSTRUCTION GRADE

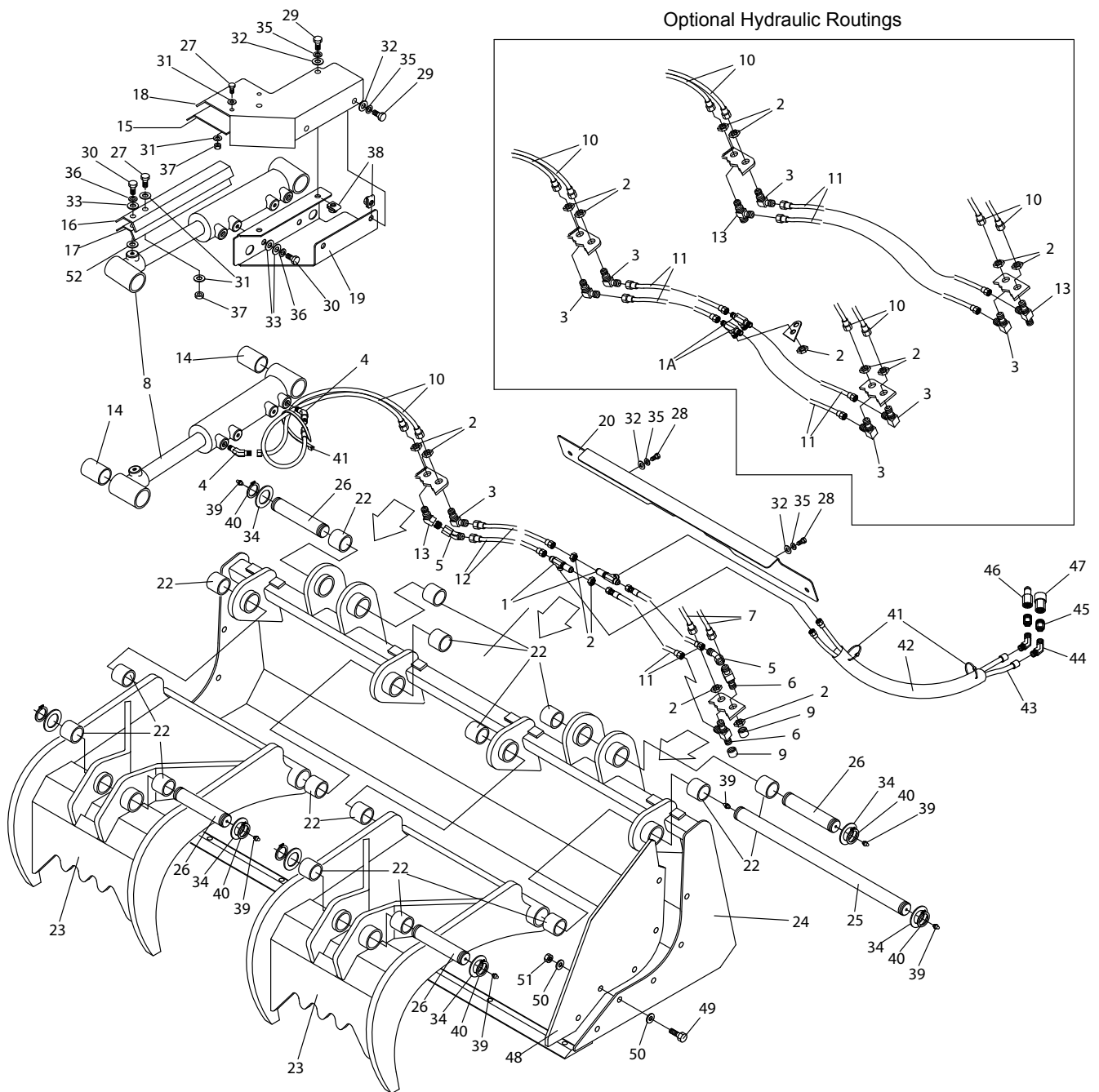
ITEM	QTY	LAF5273 73"	LAF5278 78"	LAF5282 82"	LAF5287 87"	DESCRIPTION
35	12				1503	.38" Lock Washer
36	6				1505	.50" Lock Washer
37	6				1629	.25" UNC Nylock Nut
38	8				RHW7210	.38" UNC U-Style Clip Nut
39	8				6616	Grease Fitting
40	12				1684	Snap Ring 1.50"
41	4				7104	Cable Ties
*42	1				34089	Hose Sock
*43	2				LAF4343	Hose .38" X 78" 6FJ-8MBo
*44	2				30442	90° Elbow 8FBo-8MBo (Not required for all models)
*45	2				30377	Straight Adapter 8FBo-12MBo (Not required for all models)
*46	1				22519	Male Coupler
*47	1				22518	Female Coupler

					LAF5250	OPTIONAL END PLATE EXTENSION KIT
48	2				LAF9556	Endplate Extension Plate
49	8				1091	.50" UNC X 1.75" Hex Capscrew
50	16				1516	.50" Flat Washer
51	8				1841	.50" UNC Deformed Lock Nut

NOTE: All parts are the same as LAF5287 except for those parts numbered under other sizes.
 *ITEM may vary per Prime Mover -- Contact FFC for correct item.

MODEL 130 SCRAP GRAPPLE BUCKET

EXTRA HEAVY DUTY CONSTRUCTION GRADE



MODEL 130 SCRAP GRAPPLE BUCKET

EXTRA HEAVY DUTY CONSTRUCTION GRADE

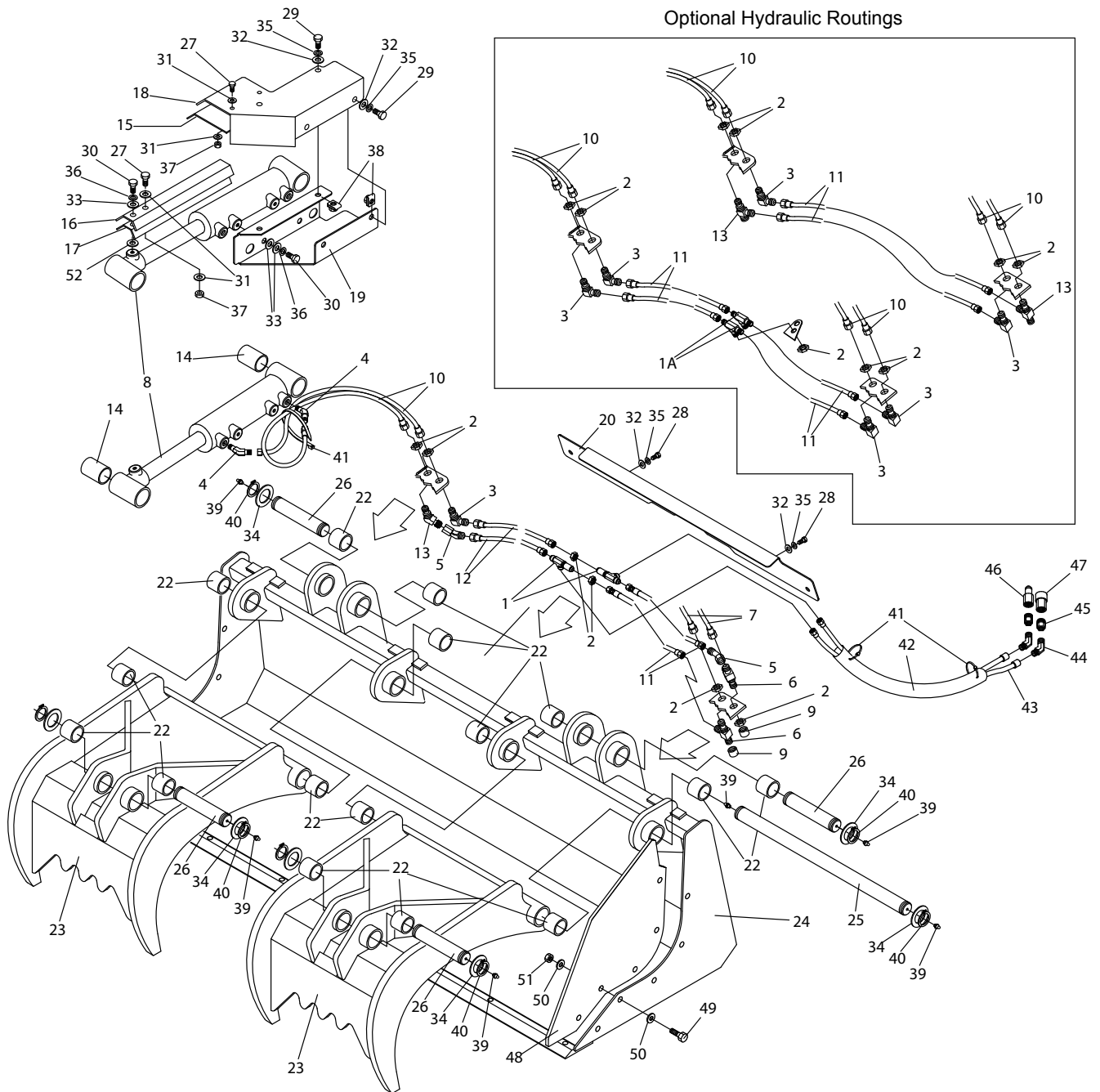
ITEM	QTY	LAF5283 82"	LAF5294 93"	DESCRIPTION
*1	2		3498	Branch Tee-BH 6MJ-6MJ-6MJ
*1A	2		3498	Branch Tee-BH 6MJ-6MJ-6MJ
2	6		3217	Jam Nut-BH, 6JIC
3	1		3282	90° Elbow-BH, 6MJ-6MJ
4	4		30313	45° Elbow 6MBo-6MJ
*5	2		3469	45° Elbow 6MJ-6FJX
6	2		30379	Run Tee-BH 6MJ-6MJ-6MJ
7	2		38107	Hose .25" x 17", 6FJ-6FJ
8	2		LAF4773	Cylinder Assembly
9			Not Used	
10	2		38107	Hose .25" x 17" 6FJ-6FJ
11	2		37689	Hose .25" x 15" 6FJ-6FJ
12	2		37689	Hose .25" x 15" 6FJ-6FJ
13	1		3282	90° Elbow-BH, 6MJ-6MJ
14	4		LAF9559	Spring Bushing 1.75" x 1.50" x 3"
15	2		LAF9571	Cylinder Cover Top Liner
16	2		LAF9572	Cylinder Guard
17	2		LAF9573	Cylinder Guard Liner
18	1 1		LAF9592 LAF9524	Cylinder Guard Top Left Cylinder Guard Top Right
19	1 1		LAF9593 LAF9525	Cylinder Guard Bottom Left Cylinder Guard Bottom Right
20			Not Used	
21			Not Used	
22	16		LAF9602	Spring Bushing 1.75" x 1.50" x 2"
23	2		LAF9603	Grapple
24	1	LAF9590	LAF9560	Bucket
25	2		LAF9606	Grapple Pivot Pin
26	4		LAF9607	Cylinder Pin
27	6		1002	.25" UNC X .75" Hex Capscrew
28			Not Used	
29	8		1044	.38" UNC X 1.25" Hex Capscrew

NOTE: All parts are the same as LAF5294 except for those parts numbered under other sizes.

*NOTE: ITEM (5) is installed above the bulkhead plate for these models rather than as shown on the Parts Illustration (page 18).

MODEL 130 SCRAP GRAPPLE BUCKET

EXTRA HEAVY DUTY CONSTRUCTION GRADE



MODEL 130 SCRAP GRAPPLE BUCKET

EXTRA HEAVY DUTY CONSTRUCTION GRADE

ITEM	QTY	LAF5283 82"	LAF5294 93"	DESCRIPTION
30	6		1088	.50" UNC X 1.00" Hex Capscrew
31	12		1512	.25" Flat Washer
32	8		1514	.38" Flat Washer
33	10		1516	.50" Flat Washer
34	12		68057	Machinery Bushing 1.50" x 2.25"
35	8		1503	.38" Lock Washer
36	6		1505	.50" Lock Washer
37	6		1629	.25" UNC Nylock Nut
38	8		RHW7210	.38" UNC U-Style Clip Nut
39	8		6616	Grease Fitting
40	12		1684	Snap Ring 1.50"
41	2		7104	Cable Ties
*42	1		34089	Hose Sock
*43	2		38604	Hose
*44	2		30442	Hydraulic Elbow (Not required for all models)
*45	2		30377	Hydraulic Adapter (Not required for all models)
*46	1		19632	Hydraulic Coupler Male Connection
	1		22518	Hydraulic Coupler Female Connection

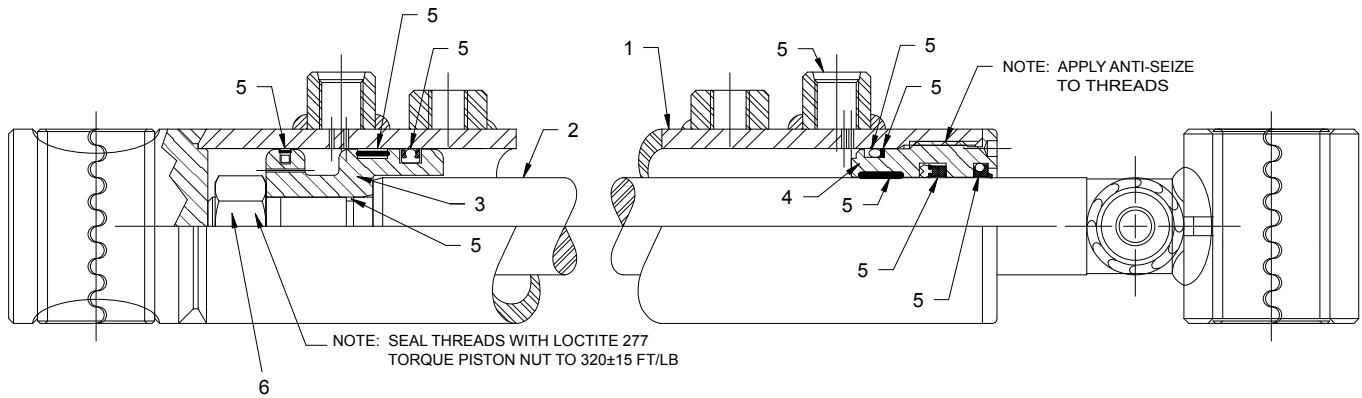
			LAF5252	OPTIONAL END PLATE EXTENSION KIT
48	2		LAF9515	Endplate Extension Plate
49	8		1091	.50" UNC X 1.75" Hex Capscrew
50	16		1516	.50" Flat Washer
51	8		1841	.50" UNC Deformed Lock Nut

NOTE: All parts are the same as LAF5294 except for those parts numbered under other sizes.

*ITEM may vary per Prime Mover -- Contact FFC for correct item.

CYLINDER ASSEMBLY

ASSEMBLY #LAF4773



ITEM	QTY.	LAF4773	DESCRIPTION
1	1	LAF4786	Cylinder Tube
2	1	LAF4787	Cylinder Rod
3	1	LAF4788	Piston
4	1	LAF4543	Cylinder Gland
5	1	LAF4789	Seal Kit (Includes all Seals, O-Rings, etc.)
6	1	LAF4104	Grade 8 Nut 1" 14 tpi.

SUPPLEMENTAL

IMPORTANT Failure to install Flow Restrictor Valve as specified below **CAN** result in damage to the power unit and **WILL** void all FFC warranties.

MODELS:

CASE 021D, 221D and 321D

NEW HOLLAND LW50.B, LW60.B, LW70.B and LW80.B

Action Required

Install the Flow Restrictor Valve as shown below. The amount of flow restriction this valve provides is adjustable. Turning the knob on the valve clockwise increases the flow restriction which reduces the speed of the bucket cylinder retraction. Turning the knurled knob counter-clockwise decreases the flow restriction which increases the speed of the bucket cylinder retraction. The bucket cylinder extension speed is not affected by this adjustment. After installation, adjust the valve so the attachment will not dump too fast and slam against the stops.

Parts Information

The Adjustable Flow Restrictor Valve Kit (FFC) part number is 03-10009 (Case part #424240A1). This valve is made up of the following parts:

Item	Qty.	Part No.	Designation
1	1	424239A1	Valve, Adjustable Flow Restrictor
2	1	421409A1	Union
3	1	420798A1	Union

